GOVERNMENT/INDUSTRY AERONAUTICAL CHARTING FORUM
Instrument Procedures Group
April 22, 2008
HISTORY RECORD

FAA Control # 08-01-281

Subject: Cold Temperature Annotations On RNAV (GPS) Approaches

Background/Discussion: On many RNAV (GPS) approaches, there is a printed restriction: "Baro-VNAV not authorized below XX deg C".

This limitation inappropriately targets baro-VNAV as unsafe to use in cold temperatures and may cause one of the following outcomes:

- The crew could decide to divert if no other option is available
- The crew could use dive-and-drive approach methods, using the same altimeters that would be used by baro-VNAV as a reference

This limitation should permit use of approved cold temperature correction methods, per the ICAO standard and the AIM and should be applied to all types of approach methods, not just baro-VNAV. As written, the limitation may prevent use of baro-VNAV which has proven to be safer than the use of other pitch modes such as vertical speed.

Recommendation: Revise the charted note to state something like the following: "Use of approved cold temperature correction procedures is required for temperatures below XX degrees C"

Comments: This recommendation affects policy guidance in FAA Orders 8260.54A and 8260.19D.

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Date: April 9, 2008

Initial Discussion - MEETING 08-01: New issue introduced by Mark Ingram, ALPA, for Bill Royce, Boeing Flight Operations. Boeing is concerned that the charted note, "Baro-VNAV not authorized below XX deg C" inappropriately targets baro-VNAV as unsafe. The note could lead pilots to fly a "dive and drive" methodology, which is also affected by temp. Kevin Comstock, ALPA, pointed out this issue was brought to the ACF by Ted Thompson, Jeppesen, in 2001 (Issue 04-01-251). At the same meeting the issue was presented, it was combined with Issue 92-02-110 and then never discussed again. Tom Schneider, AFS-420,

advised that the note quoted above is outdated. The correct notes required in the current Order 8260.19 are: "For uncompensated Baro-VNAV systems, LNAV/VNAV NA below ____°C (____°F) or above ____°C (____°F). For RNAV RNP procedures, use: "For uncompensated Baro-VNAV systems, Procedure NA below ____°C (____°F) or above ____°C (____°F)". Tom added that revised AIM language has been forwarded for publication on July 31 that will emphasize that temperature limitations do not apply to flying the LNAV/VNAV line of minima using approach certified WAAS receivers when LPV or LNAV/VNAV are annunciated to be available. Brad Rush, AJW-321, said it will take years to modify the thousands of currently published approaches with the old note to the new note language. Bill Hammett, AFS-420 (ISI) stated that cold temperature corrections are used by ATC at some USAF locations. Dan Diggins, AJT-22, questioned whether the procedures were controller or pilot initiated. James Taylor, USAFFSA, responded that USAF pilots are instructed to apply cold temperature corrections to approach procedures as they deem necessary as long as the altitude is identified as "at or above". Mark will further research the issue and report at the next meeting. A copy of Bill Royce's briefing slides is attached here .

Editor's Addition: *Although not presented at the meeting, the following pre-meeting input on the issue was developed by Jack Corman, the AFS-420 lead RNAV criteria specialist, and is provided for historical purposes: "It is important to note that for ILS, when airport temperatures are very low, the vertical path of the glide slope does not change; therefore, the ILS obstacle clearance surface continues to provide obstruction clearance. In this case, an additive to DA can compensate for low temperature. In Baro-VNAV, when airport temperatures are very low, the vertical path flattens. A coded 3 degree path in reality (without cockpit indications) becomes somewhat less than 3 degrees. The obstacle clearance surface still protects for 3 degrees; however, when the realized glidepath is less than 3 degrees because of cold temperatures, required minimum obstacle clearance is not provided - the colder the temperature, the greater the hazard (loss of obstacle clearance). The hazard becomes excessive below the published temperatures; hence a note prohibiting Baro-VNAV is published. A DA additive in these cases is of little benefit, since the aircraft is actually below the protected path from the FAF inbound, not just at DA. An additive to the FAF altitude and DA is better, but we haven't officially quantified (universally blessed for obstacle clearance) the values to use. They may well be like those depicted in the table depicted in the presentation. Until such action is officially taken, I see no alternative to the published note unless some other ops spec mandated action can assure the aircraft flies the designed path."*

Mark agreed to coordinate with Boeing to see if the new note language satisfies the Boeing concern so that the issue may be closed. ACTION: ALPA.
